

QIBA Dynamic Contrast Enhanced (DCE) Biomarker Committee (BC) Call

Monday, January 7, 2019 at 11 AM (CT)

Call Summary

Participants

Caroline Chung, PhD (Co-Chair)

Hendrik Laue, PhD (Co-Chair)

Michael Boss, PhD

Martin Büchert, PhD

Cristina Lavini, PhD

Anthony Liu, PhD

Dariya Malyarenko, PhD

Krishna Nayak, PhD

Susan Noworolski, PhD

Qing Yuan, PhD

RSNA

Joe Koudelik

Susan Stanfa

Moderator: Dr. Laue

Report: DCE Breakout Session during QIBA Working Meeting at RSNA Annual Meeting

- Discussion focused on conformance assessment
- Progress was made on Section 3: Profile Activities subsections
- Main Profile sections were cleaned up to include only tasks reflected in the check list; general discussion text was moved to discussion sections

DCE Profile Update (Dr. Laue) (Sections 3.1 – 3.2)

- DCE BC members encouraged to review and comment on Profile at:
<https://docs.google.com/document/d/1in76va1Q96tVX97RWLHHqimOHxCeDsMqh98na8pwOb8/edit?usp=sharing>
 - Please note: Google Docs is being used for its collaborative properties and versioning control; please make comments directly on the document (as opposed to downloading Profile to one's local computer and emailing)
- 3.0: Site Conformance
 - 3.0.2 Specification Table updates:
 - Suggestion to replace "site" with "physicist" as actor of "Acquisition Devices" parameter
 - Radiologist, physicist and technologist specifications were moved to Section 3.1: "Staff Qualification"
 - Dr. Chung to remove redundant text
- 3.1: Staff Qualification
 - Dr. Boss to email Dr. Chung text from the DWI Profile for reference
 - Qualifications for each actor in specification table were discussed
 - The term Scanner Operator was suggested to generalize the actor
- 3.2: Site Qualification
 - The following change to text was made: "Activity involves evaluating the **capability of the site product** ~~Actors prior to adhere to their use in the Profile~~"
 - Only guidance to achieve the Claim is needed in specification table 3.2.2; Dr. Boss to send Drs. Chung and Laue an example of how this was executed in the DWI Profile
- Efforts will be made to streamline and finish the Profile

R1 Phantom Availability

- Awaiting access to DCE physical phantom once the ACRIN study has been completed; both phantom and analysis software were results of QIBA groundwork projects
- Discussion regarding text that was added to the DCE Profile:
 - “The suitability of MRI hardware and sequence for DCE-MRI can be evaluated by using a hardware R1/T1-mapping phantom”
 - “A prototype was developed by QIBA and could be made available (Contact Drs. Jackson or Laue)”
 - “Other phantoms have been developed and are commercially available (<https://www.ultrasoundenterprises.com/mritext.html>)
 - Specifics regarding T1 or R1 reference values or ranges to be included
- Characteristics and specifications of technical abilities of phantoms and/or software to be provided
 - T1 & T2 phantoms deemed difficult to obtain due to cost and limited availability
 - There was additional discussion regarding fabrication of phantom shells, fill solutions used and accessibility of materials
 - It was noted that the more physiologically relevant a phantom is, the higher the cost will be
- Phantoms for scanner calibration and vendor sequence checking must be adequate to test the Profile Claim(s)
- Because the ADC phantom (used by the DWI Profile) has been successfully adapted for the DSC BC, it was suggested that this could be adapted for the DCE Profile; Dr. Boss to send the phantom manufacturer (High Precision Devices-HPD) details to Drs. Chung & Laue
- This discussion to be continued during the next DCE BC call

B1 Mapping Groundwork Project Update (Dr. Nayak)

- The Round-6 project has been completed and a corresponding manuscript is under review for publication
- Different vendors commercialize different B1-mapping techniques, so some form of correction is needed for cross-comparison; datasets were scaled for data consistency
- Imaging protocols have already been provided by three major vendors
- Brain imaging phantom and torso phantom were developed; calibration processes differ based on organ systems
- B1 maps (of static phantom) from different scanners to be uploaded to the Quantitative Imaging Data Warehouse (QIDW) including specific sequences utilized
- Dr. Nayak not aware of existing vendor software solutions that interpret B1 maps, but noted that some radiology professionals have published their own algorithms
- Dr. Nayak to reach out to vendor contact to see whether they will incorporate QIBA-recommended pulse sequences into their protocols

Next DCE BC Call: Monday, February 4, 2019 at 11 AM CT [no call on Jan 21 due to Martin Luther King Day federal holiday]

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